

(B) AMENDMENTS TO THE CLAIMS

The listing of claims below replaces all previous versions of the claims in this application.

- [c1] (Currently Amended) A method for processing seismic data, comprising:
prestack depth migrating the seismic data to generate common image gathers
using an initial velocity-depth model;
selecting at least one horizon in the migrated seismic data;
performing residual migration velocity analysis in the depth-offset domain at the
least one selected horizon, the analysis including calculating depth
residual with respect to offset; and
updating the velocity-depth model based on the residual migration velocity
analysis.
- [c2] (Original) The method of claim 1 wherein the prestack depth migration comprises
Kirchhoff integral depth migration.
- [c3] (Original) The method of claim 1 wherein the residual migration velocity analysis
comprises:
applying a perturbation to an initial value of slowness used in the migration;
applying a residual moveout in a common image gather;
determining flatness in a common image gather at a selected horizon; and
repeating applying the perturbation, applying the residual moveout and the
determining the flatness until a selected range of perturbation is covered.
- [c4] (Original) The method as defined in claim 3 wherein the determining the flatness
comprises determining a semblance between traces in the common image gather,
wherein a maximum semblance corresponds to a maximum flatness.
- [c5] (Original) The method of claim 4 wherein the updating the velocity-depth model
comprises replacing migration velocities with velocities obtained from the

determining semblance of the common image gather and updating depth using the velocities obtained from the determining semblance.

[c6] (Original) The method of claim 1 further comprising repeating the residual migration velocity analysis in the depth-offset domain on a deeper horizon than the at least one selected horizon based on the updated velocity depth model, and repeating the updating the velocity-depth model based on the repeated residual analysis.

[c7] to [c12] Canceled